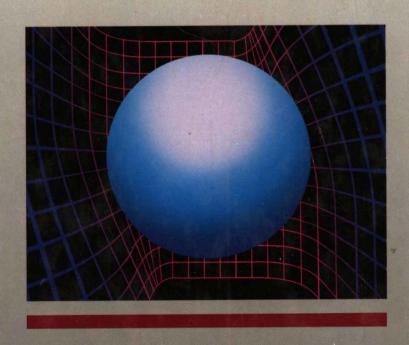
RUDIGER DORNBUSCH AND STANLEY FISCHER

MACROECONOMICS



FIFTH EDITION



fifth edition

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MACROECONOMICS

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	PREFACE

The fifth edition is the most ambitious working over of *Macroeconomics* since the book was first published. Every new edition offers the opportunity to add material, round out arguments, and update information and case studies. But occasionally it is essential to make a complete evaluation of progress in the field, rethink issues, and restate arguments in the light of new findings and new ways of thinking. When the first edition came out, in 1978, today's New Keynesians had barely finished their first degrees, rational expectations was only starting to flourish, and the real business cycle approach had not even seen the light of day. Today it is impossible to write seriously in macroeconomics without integrating the challenges, the findings, and the perspective of those approaches. The present edition accomplishes this task.

Beyond the general recognition of these important developments in macroeconomics, we have in particular expanded material on such topics as credit rationing, efficiency wages, the Lucas supply curve, and credibility and time consistency. Interestingly, we have been able to incorporate the emphasis given by the new approaches without abandoning the structure and, indeed, much of the argument of earlier editions. The Lucas supply curve, for example, is developed as an aggregate supply curve that fits easily into the introductory material on aggregate supply and demand, but yields the extra insight of distinguishing between anticipated and unanticipated monetary changes.

THREE MAJOR AREAS OF CHANGE

We have very substantially rewritten material in three areas. First, the money market is today dominated by the fact that most money pays interest. That changes much of the argument in traditional treatments of money demand and raises the interesting

question of what happens to monetary policy in such a world. We have refocused the chapters to highlight the central role today of M2, but we also use the occasion to caution against believing in the existence of permanently stable relationships, such as the stability of M2 velocity.

Issues of budget deficits and the public debt are prominent in macroeconomics today: Do deficits matter? Is there Ricardo-Barro equivalence? Are we really indifferent between taxes now and taxes later? We have amplified and developed this material to give an up-to-date evaluation of the arguments, the presumptions, and the empirical evidence.

International economic issues are now firmly part of macroeconomics. The "twin deficits," the dollar, and the crowding out brought about by an export boom are all topics that belong today in a balanced macroeconomics course. In a previous edition we already moved some of this material into an early chapter, rather than relegating it to those classes at the end of the semester that the instructor hopes to reach but never does. This edition develops the international perspective further and also offers comparisons of international data for key issues.

OTHER SIGNIFICANT IMPROVEMENTS

Data and case studies are essential in grasping what the macroeconomic issues are all about. Accordingly, we have now provided significantly more material of the case study variety in boxes and in the text. We have also added data appendixes for key chapters. These data allow students to go ahead and form their own judgment about the arguments advanced in the book.

If macroeconomics is in a state of flux, awareness of alternative approaches is important. We have not only stated and developed these in the text, but also go further by providing substantial bibliographical information. We refer in footnotes not only to literature of the very useful survey kind, but also to more difficult articles that mark the frontiers of current academic debate.

GENERAL APPROACH

As to our general approach, we repeat here what we said in the preface to earlier editions. We have remained faithful to our basic approach, presenting the relevant theory and at the same time showing both its empirical relevance and policy applications. We have, of course, stayed with our generally eclectic outlook on macroeconomics.

Although there are major changes from earlier editions, the book remains recognizably the same in that it develops, and teaches students to use, a broad-based, critical, and useful macroeconomics. Our overriding objective is to explain how modern macroeconomics is used in understanding important economic issues, and to help readers analyze macroeconomic issues for themselves. The book provides full coverage of all major topics in macroeconomics. No important topic has been omitted because it is too difficult, but we have taken great pains to make nothing more difficult than it need be.

TEACHING AIDS

An *Instructor's Manual* and *Test Bank* to accompany the text have been prepared by Professor Juergen Fleck of Hollins College. The *Instructor's Manual* has been substantially updated and includes chapter summaries, learning objectives, solutions to the end-of-chapter problems, and many additional problems (and their solutions) to be used for class discussion, homework assignments, or examination questions. The *Test Bank* has been expanded and now includes more than 750 questions. The *Study Guide* by Professor Richard Startz of the University of Washington, Seattle, has also been revised and brought up to date.

Also, there is now available a software program, *PC-Macroeconomics*, developed by Professors F. Gerard Adams and Eugene Kroch of the University of Pennsylvania, which provides an important tool to put macroeconomics in action. The software follows the sequencing in the text and patiently builds the analytical framework by using empirical data that allow students to understand macroeconomics in a step-by-step integration of text, data, and graphics. Students can either view the analysis in a demonstration mode, choose to interact within the parameters, or even change those parameters as desired. It uses the Lotus 1-2-3 application program (version 2.0 or higher) for IBM-PCs and most compatibles.

Ben Bernanke of Princeton, one of the profession's best teachers, has prepared a book of case studies and readings to accompany *Macroeconomics*.

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TO THE STUDENT

Macroeconomics is not cut and dried. There are disputes over basic issues—for instance, over whether the government should try actively to fight unemployment. That makes macroeconomics unsatisfying if you are looking for clear-cut, definite answers to all the economy's problems. But it should also make the subject more interesting because you have to think hard and critically about the material being presented.

Despite the disagreements, there is a substantial basic core of macroeconomics theory that we present in this book and that will continue to be useful in understanding the behavior of the economy. We have not hesitated to say where we think theories are incomplete, or where the evidence on a question is not yet decisive. But we have not hesitated, either, to describe the many areas in which macroeconomic theory does a good job of explaining the real world.

Because we have not shied away from important topics even if they are difficult, parts of the book require careful reading. There is no mathematics except simple algebra. Some of the analysis, however, involves sustained reasoning. Careful reading should therefore pay off in enhanced understanding. Chapter 1 gives you suggestions

on how to learn from this book. The single most important suggestion is that you learn actively. Some of the chapters (such as Chapter 12) are suitable for bedtime reading, but most are not. Use pencil and paper to be sure you are following the argument. See if you can find reasons to disagree with arguments we make. Work the problem sets! Be sure you understand the points contained in the summaries to each chapter. Follow the economic news in the press, and see how that relates to what you are learning. Try to follow the logic of the budget or any economic packages the administration may present. Occasionally, the chairpersons of the Federal Reserve Board or the Council of Economic Advisers testify before Congress. Read what they have to say, and see if it makes sense to you.

A *Study Guide*, by Richard Startz of the University of Washington – Seattle, is available to accompany this edition. The *Study Guide* contains a wide range of questions, starting from the very easy and progressing in each chapter to material that will challenge the more advanced student. It is a great help in studying, particularly since active learning is so important in mastering new material. Also, *PC-Macroeconomics*, a software program that is new to this edition, is designed to give hands-on practice with empirical data and will be a valuable part of your learning experience.

Rudiger Dornbusch Stanley Fischer

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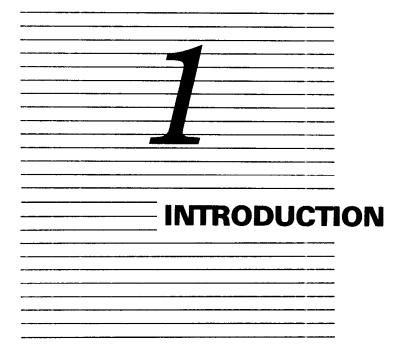
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acroeconomics is concerned with the behavior of the economy as a whole — with booms and recessions, the economy's total output of goods and services and the growth of output, the rates of inflation and unemployment, the balance of payments, and exchange rates. Macroeconomics deals with the increase in output and employment over long periods of time — that is, economic growth — and with the short-run fluctuations that constitute the business cycle.

Macroeconomics focuses on the economic behavior and policies that affect consumption and investment, the dollar and the trade balance, the determinants of changes in wages and prices, monetary and fiscal policies, the money stock, the federal budget, interest rates, and the national debt. In brief, macroeconomics deals with the major economic issues and problems of the day.

Macroeconomics is interesting because it deals with important issues. But it is fascinating and challenging too, because it reduces complicated details of the economy to manageable essentials. Those essentials lie in the interactions among the goods, labor, and assets markets of the economy and in the interactions among national economies that trade with each other.

In dealing with the essentials, we go beyond details of the behavior of individual economic units, such as households and firms, or the determination of prices in particular markets. These are the subject matter of microeconomics. In macroeconomics we deal with the market for goods as a whole, treating all the markets for different goods—such as the markets for agricultural products and for medical services—as a single market. Similarly, we deal with the labor market as a whole, abstracting from differences between the markets for, say, migrant labor and doctors. We deal with the assets markets as a whole, abstracting from differences between the markets for IBM

shares and for Rembrandt paintings. The cost of the abstraction is that omitted details sometimes matter. The benefit of the abstraction is increased understanding of the vital interactions among the goods, labor, and assets markets. Passing over the details of thousands of individual markets allows us to focus more clearly on these key markets.

Despite the contrast between macroeconomics and microeconomics, there is no conflict between them. On the contrary, the economy in the aggregate is nothing but the sum of its submarkets. The difference between microeconomics and macroeconomics is, therefore, primarily one of emphasis and exposition. In studying price determination in a single industry, it is convenient for microeconomists to assume that prices in other industries are given. In macroeconomics, in which we study the price level, it is for the most part sensible to ignore changes in relative prices of goods among different industries. In microeconomics, it is convenient to assume that the total income of all consumers is given and to then ask how consumers divide their spending of that income among different goods. In macroeconomics, by contrast, the aggregate level of income or spending is among the key variables to be studied.

The great macroeconomists have always enjoyed a keen interest in the application of macrotheory to policy. This was true in the case of John Maynard Keynes and is true of modern American leaders in the field, especially the older Nobel laureate generation, such as Milton Friedman of the University of Chicago and the Hoover Institution, Franco Modigliani and Robert Solow of the Massachusetts Institute of Technology, and James Tobin of Yale University. But even the younger leaders, such as Robert Barro and Martin Feldstein of Harvard University, Robert Lucas of the University of Chicago, and Robert Hall, Thomas Sargent, and John Taylor of Stanford University, despite being more—and in some cases altogether—skeptical about the wisdom of active government policies, do analyze policy issues. The fundamental questions are, *Can* the government and *should* the government intervene in the economy to improve its performance?

Indeed, developments in macrotheory are closely related to the economic problems of the day. *Keynesian* economics developed during the great depression of the 1930s and showed the way out of such depressions. *Monetarism* developed during the 1960s, promising a way of solving the inflation problem. *Supply-side economics* became the fad of the early 1980s, promising an easy way out of the economic mess of the time by cutting taxes. But supply-side economics overpromised, and there was no easy way out. Today an influential school of thought, led by Robert Lucas, questions the effectiveness of policy. Even so, the scope for and limits of policy remain at the center of debate. Beyond a questioning of policy effectiveness, the 1980s have also brought a renewed interest by macroeconomists in *economic growth*: The basic questions here are, What factors help explain the increase in a country's standard of living over time, and what role can economic policies play in speeding up economic progress?

Because macroeconomics is closely related to the economic problems of the day, it does not yield its greatest rewards to those whose primary interest is theoretical. The need for compromise between the comprehensiveness of the theory and its manageability inevitably makes macrotheory a little untidy at the edges. And the emphasis in macroeconomics is on the manageability of the theory and on its applica-

tions. This book uses macroeconomics to illuminate economic events from the great depression through the 1980s. We refer continually to real world events to elucidate the meaning and the relevance of the theoretical material.

1-1 controversies and the research agenda

There are three central issues on the research agenda in macroeconomics. First, how do we explain periods of high and persistent unemployment? For example, in the 1930s unemployment was over 20 percent for several years, and the postwar period has also seen high unemployment rates on several occasions. In the United States, unemployment reached 10.6 percent in 1982 and averaged nearly 9 percent from 1982 to 1984; by early 1989 the unemployment rate was down to 5 percent. Several European economies, including the United Kingdom and France, suffered double-digit unemployment during much of the eighties.

Macroeconomic research focuses on persistent unemployment as a central question. There are many theories of why persistent high unemployment is possible, and we shall develop the most important in this book. There is also the research question of what should be done about unemployment. Some say not much: that the government should put in place appropriate unemployment compensation schemes¹ and otherwise not undertake any special policies — for instance, cutting taxes — to deal with unemployment. This view, which may seem extraordinary to someone new to economics (and even to someone who has spent a life in the field), is maintained, for example, by Robert Lucas, one of the leaders in the profession.² Others argue that the government should pursue an active fiscal policy, for instance by cutting taxes and/or raising government spending when unemployment is high.

A second major research issue is how to explain inflation: Why did prices in the United States rise by more than 10 percent a year in 1979 and 1980, and by less than 2 percent in 1986? And what causes hyperinflations, when prices rise by more than 1,000 percent per year, as for instance, the more than 11,000 percent increase in prices in Bolivia in 1985? The policy issues here are how to keep inflation low; and, if it is high, how to reduce it without raising unemployment.

The third major research question is, What determines the rate of growth of output? Why has output per person risen more or less steadily in the United States at an annual rate of 1.7 percent, doubling every 40 years? And why has output grown more rapidly in Japan than in the United States over the past century? Will the Japanese economy keep growing more rapidly than the U.S. economy when income per person reaches the U.S. level—as, by some measures, it already has?

¹ That is, schemes that make some payments to unemployed workers as compensation to them for losing their jobs; the worker is required to look for a new job, and the compensation usually lasts for a specified period, such as 26 weeks. After that if the worker still does not have a job and needs income, he or she has to go on welfare.

² See Robert Lucas, Models of Business Cycles (Oxford, England: Basil Blackwell, 1987).

The questions of whether the government can and should do something about unemployment and what is best to do have been at the center of macroeconomics for a long time. These questions continue to divide the profession, and every generation develops its own debate, reinterpreting past events, such as the great depression of the 1930s and more recent episodes. Similarly, views about inflation differ among economists. Some believe that inflation can be controlled by keeping money growth low and that the way to stop rapid inflation is to stop the money growth that certainly accompanies the inflation; others argue that the links between money and inflation are at best imprecise, and that merely cutting money growth in a high inflation economy will also cause a recession that could be avoided by more sophisticated policies. There are still many unresolved questions but fewer controversies about the causes of growth.

We introduce here briefly the major schools of thought. In doing so we must bear in mind that while the unemployment, inflation, and growth issues are central problems of macroeconomics, there are many others, important and less so. Among the important issues are the international dimensions of macroeconomics, as the world economy becomes increasingly integrated and a stock market crash one day in New York spreads almost instantly to London, Tokyo, Frankfurt, Sydney, Hong Kong, Mexico City, and every other stock market. Among the apparently less important issues is the question of why wages are so "sticky," why they change slowly, rather than quickly as does the price of fish. But even the answers to such an apparently unimportant question may help in understanding how unemployment can emerge.

Schools of Thought

There have long been two main intellectual traditions in macroeconomics. One school of thought believes that markets work best if left to themselves; another believes that government intervention can significantly improve the operation of the economy. In the 1960s, the debate on these questions involved *monetarists*, led by Milton Friedman, on one side and *Keynesians*, including Franco Modigliani and James Tobin, on the other side. In the 1970s, the debate on much the same issues brought to the fore a new group—the *new classical macroeconomists*.

THE NEW CLASSICAL SCHOOL

The new classical macroeconomics, which developed in the 1970s, remained influential in the 1980s. This school of macroeconomics, which includes among its leaders Robert Lucas, Thomas Sargent, Robert Barro, and Edward Prescott and Neil Wallace of the University of Minnesota, shares many policy views with Friedman. It sees the world as one in which individuals act rationally in their self-interest in markets that adjust rapidly to changing conditions. The government, it is claimed, is likely only to make things worse by intervening. That model is a challenge to traditional macroeconomics, which sees a role for useful government action in an economy that is viewed as adjusting sluggishly, with slowly adjusting prices, poor information, and social customs impeding the rapid clearing of markets.

The central working assumptions of the new classical school are three:

- Economic agents maximize. Households and firms make optimal decisions. This
 means that they use all available information in reaching decisions and that those
 decisions are the best possible in the circumstances in which they find themselves.
- Decisions are rational and are made using all the relevant information. Expectations are rational when they are statistically the best predictions of the future that can be made using the available information. Indeed, the new classical school is sometimes described as the rational expectations school, even though rational expectations is only one part of the theoretical approach of the new classical economists.³ The rational expectations implication is that people eventually will come to understand whatever government policy is being used, and thus that it is not possible to fool most of the people all the time or even most of the time.
- Markets clear. There is no reason why firms or workers would not adjust wages or prices if that would make them better off. Accordingly prices and wages adjust in order to equate supply and demand; in other words, markets clear. Market clearing is a powerful assumption, as we shall see presently.

One dramatic implication of these assumptions, which seem so reasonable individually, is that there is no possibility for *involuntary* unemployment. Any unemployed person who really wants a job will offer to cut his or her wage until the wage is low enough to attract an offer from some employer. Similarly, anyone with an excess supply of goods on the shelf will cut prices so as to sell. Flexible adjustment of wages and prices leaves all individuals *all the time* in a situation in which they work as much as they want and firms produce as much as they want.

The essence of the rational expectations equilibrium approach is the assumption that markets are continuously in equilibrium. In particular, new classical macroeconomists regard as incomplete or unsatisfactory any theory that leaves open the possibility that private individuals could make themselves better off by trading among themselves. As Lucas put it, "there are no \$50 bills lying on the sidewalk," meaning that if there were ways in which individuals could improve their material position, they would do so.

Adherents of the new classical school do not doubt that the great depression did take place, and they recognize that the measured unemployment rate occasionally reaches more than 10 percent. Their explanations for these observations, which are consistent with the view that people are at all times doing what is best for them, will be discussed in Chapter 13.

³ Many economists who are not members of the new classical school assume that expectations are rational.

THE NEW KEYNESIANS

The new classical group remains highly influential in today's macroeconomics. But a new generation of scholars, the *new Keynesians*, mostly trained in the Keynesian tradition but moving beyond it. has emerged in the 1980s. The group includes among others George Akerlof and Janet Yellen of the University of California – Berkeley, Olivier Blanchard of the Massachusetts Institute of Technology, Greg Mankiw and Larry Summers of Harvard, and Ben Bernanke of Princeton University. They do not believe that markets clear all the time but seek to understand and explain exactly why markets can fail.

The new Keynesians argue that markets sometimes do not clear even when individuals are looking out for their own interests. Both information problems and costs of changing prices lead to some price rigidities and, as a result, create a possibility for macroeconomic fluctuations in output and employment. For example, in the labor market, firms that cut wages not only reduce the cost of labor, but are also likely to wind up with a poorer-quality labor force. Thus they will be reluctant to cut wages. If it is costly for firms to change the prices they charge and the wages they pay, the changes will be infrequent; but if all firms adjust prices and wages infrequently, the economy-wide level of wages and prices may not be flexible enough to avoid occasional periods of even high unemployment.

ECONOMIC CONTROVERSY

This description of the two main strands in macroeconomics may suggest that the field is little more than the battleground between implacably opposed schools of thought. There is no denying that there are conflicts of opinion and even theory between different camps. And because macroeconomics is about the real world, the differences that exist are sure to be highlighted in political and media discussions of economic policy.

It is also the case, though, that there are significant areas of agreement and that the different groups, through discussion and research, continually evolve new areas of consensus and a sharper idea of where precisely the differences lie. For instance, there is now a consensus emerging on the importance of information problems for wage and price setting and economic fluctuations. In this book we do not emphasize the debate, preferring to discuss the substantive matters, but we do indicate alternative views of an issue whenever that is relevant.

In the remainder of this chapter we present an overview of the key concepts with which macroeconomics deals. Section 1-2 examines key concepts: output, prices, growth, and inflation. Relationships among the main macroeconomic variables are discussed in Section 1-3. Section 1-4 presents a diagrammatic introduction to aggregate demand and supply and their interaction; it gives a very general perspective on the fundamentals of macroeconomics and the organization of this book. Section 1-5 introduces stabilization policy. Then, in Section 1-6, we outline the approach of the book to the study of macroeconomics and of macropolicy making and present a preview of the order in which topics are taken up. Section 1-7 contains brief remarks on how to use the book.